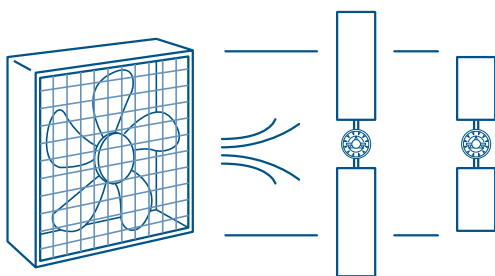
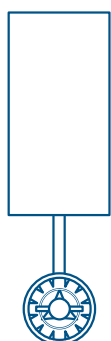
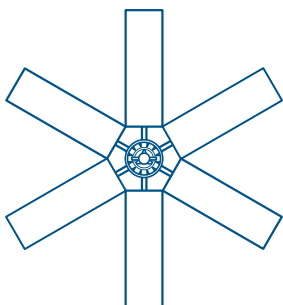


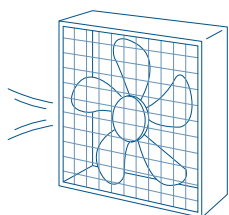
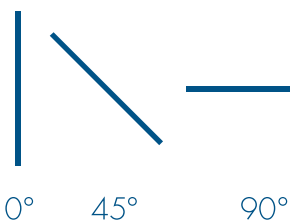
More drag



Less drag



Blade pitch



## More power: Improve your blades

KidWind wind turbines are designed for use in science classes or as a hobby or science fair project. They were created to allow students a method to perform blade design experiments. Our turbines are not specifically designed to light bulbs, spin motors, or charge batteries, but they can if you have a good fan and manage to design efficient blades.

Having efficient blades is a key part of generating electricity from a wind turbine. Sloppy, poorly made blades will never make enough electricity to do anything. It takes time and thought to make good blades.

One thing you must always think about when making turbine blades is: "How much drag are my blades encountering?" Sure, your blades are probably catching the wind and helping to spin the hub and motor driveshaft, but could they be spinning faster? If they are adding drag, your whole system will slow down. In most cases, low RPM means less power output. The faster the blades spin, the more power you make!

### Quick tips on improving blades

- Shorten blades: Many times, students make very long blades, thinking bigger is better. That is sometimes true, but students and teachers have a very hard time making long blades without adding drag. Try shortening them a few centimeters.
- Change the pitch: Often, students will set the angle of the blades to around 45° the first time they use the turbine. Try making the blades more perpendicular to the wind flow. Pitch dramatically affects power output. Play with it a bit and see what happens.
- Use fewer blades: To reduce drag, try using 2, 3, or 4 blades.
- Use lighter material: To reduce the weight of the blades, use less material or lighter material.
- Smooth surfaces: Smoother blade surfaces experience less drag. A blade with lots of tape and rough edges will have more drag.
- Get more wind: Make sure you are using a decently sized box or room fan, one with a diameter of at least 14"–18".
- Blades vs. fan: Are your blades bigger than your fan? This could be a problem, as the tips of your blades are not catching any wind and are just adding drag.
- Blade shape: Are the blade tips thin and narrow or wide and heavy? The tips travel much faster than the roots. Wide tips add drag.